

SEQUENCE VERIFICATION REPORT

PATENT APPLICATION US/09/232,290

DATE: 12/21/1999
TIME: 00:57:56

INPUT SET: S34297.raw

Line	Error	Original Text
159	Entered (113) and Calc. Seq. Length (112) differ	(A) LENGTH: 113 amino acids
188	Wrong Amino Acid Designator	Thr His Val Pro Leu Thr Phr Gly Ala Gly Thr Lys Leu Glu
198	Entered (106) and Calc. Seq. Length (105) differ	(A) LENGTH: 106 amino acids
210	Wrong Amino Acid Designator	Asp Art Val Thr Ile Thr Cys Arg Ala Ser Gln Ser Ile Ser Ar
232	Entered (108) and Calc. Seq. Length (107) differ	(A) LENGTH: 108 amino acids
257	Wrong Amino Acid Designator	Glu Aps Phe Gly Ser Tyr Tyr Cys Gln His Phe Trp Ser Thr
449	Entered (114) and Calc. Seq. Length (113) differ	(A) LENGTH: 114 amino acids
459	Wrong Amino Acid Designator	Asp Ile Cal Met Thr Gln Ser Pro Ser Ser Leu Thr Val Thr A
2103	Response Exceeds Line Limitations	Thr Leu Ser Leu Thr Cys Ser Val Thr Gly Asp Ser Ile Thr S
2104	Response Exceeds Line Limitations	20 25 30
2106	Response Exceeds Line Limitations	Tyr Trp Ser Trp Ile Arg Lys Phe Pro Gly Asn Arg Leu Glu
2107	Response Exceeds Line Limitations	35 40 45
2109	Response Exceeds Line Limitations	Gly Tyr Val Ser Tyr Ser Gly Ser Thr Tyr Tyr Asn Pro Ser L
2110	Response Exceeds Line Limitations	50 55 60
2112	Response Exceeds Line Limitations	Ser Arg Ile Ser Ile Thr Arg Asp Thr Ser Lys Asn Gln Tyr T
2113	Response Exceeds Line Limitations	65 70 75
2115	Response Exceeds Line Limitations	Asp Leu Asn Ser Val Thr Thr Glu Asp Thr Ala Thr Tyr Tyr
2116	Response Exceeds Line Limitations	85 90 95
2118	Response Exceeds Line Limitations	Asn Trp Asp Gly Asp Tyr Trp Gly Gln Gly Thr Leu Val Th
2119	Response Exceeds Line Limitations	100 105 110
2121	Response Exceeds Line Limitations	Ala
2122	Response Exceeds Line Limitations	113
2171	Wrong Sequence Number	(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 58:



I SEQUENCE LISTING

<110> PLUCKTHUN, ANDREAS
NIEBA, LARS
HONEGGER, ANNEMARIE

<120> IMMUNOGLOBULIN SUPER FAMILY DOMAINS AND FRAGMENTS WITH
INCREASED SOLUBILITY

<130> MORPHO/7

<140> 09/232,290

<141> 1999-01-15

<150> PCT/EP96/02230

<151> 1996-05-23

<160> 60

<170> PatentIn Ver. 2.0

<210> 1

<211> 113

<212> PRT

<213> Murine

<400> 1

Asp	Ile	Val	Met	Thr	Gln	Ser	Pro	Ala	Ser	Leu	Val	Val	Ser	Leu	Gly
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Gln	Arg	Ala	Thr	Ile	Ser	Cys	Arg	Ala	Ser	Glu	Ser	Val	Asp	Ser	Tyr
		20						25					30		

Gly	Lys	Ser	Phe	Met	His	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Gln	Pro	Pro
		35					40					45			

Lys	Val	Leu	Ile	Tyr	Ile	Ala	Ser	Asn	Leu	Glu	Ser	Gly	Val	Pro	Ala
	50					55					60				

Arg	Phe	Ser	Gly	Ser	Gly	Ser	Arg	Thr	Asp	Phe	Thr	Leu	Thr	Ile	Asp
65					70					75					80

Pro	Val	Glu	Ala	Asp	Asp	Ala	Ala	Thr	Tyr	Tyr	Cys	Gln	Gln	Asn	Asn
				85					90					95	

Glu	Asp	Pro	Pro	Pro	Thr	Phe	Gly	Ala	Gly	Thr	Lys	Leu	Glu	Met	Arg
			100					105					110		

Arg

<210> 2

<211> 108

<212> PRT

<213> Murine

<400> 2

Gln Ile Val Leu Thr Gln Ser Pro Ala Ile Met Ser Ala Ser Pro Gly
 1 5 10 15
 Glu Lys Val Thr Met Thr Cys Ser Ala Ser Ser Ser Val Tyr Tyr Met
 20 25 30
 Tyr Trp Tyr Gln Gln Lys Pro Gly Ser Ser Pro Arg Leu Leu Ile Tyr
 35 40 45
 Asp Thr Ser Asn Leu Ala Ser Gly Val Pro Val Arg Phe Ser Gly Ser
 50 55 60
 Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Arg Met Glu Ala Glu
 65 70 75 80
 Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Trp Ser Ser Tyr Pro Pro Ile
 85 90 95
 Thr Phe Gly Val Gly Thr Lys Leu Asp Leu Lys Thr
 100 105

<210> 3

<211> 108

<212> PRT

<213> Murine

<400> 3

Asp Ile Gln Met Thr Gln Ser Pro Ala Ser Leu Ser Val Ser Val Gly
 1 5 10 15
 Glu Thr Val Thr Ile Thr Cys Arg Ala Ser Glu Asn Ile Tyr Ser Asn
 20 25 30
 Leu Ala Trp Tyr Gln Gln Lys Gln Gly Lys Ser Pro Gln Leu Leu Val
 35 40 45
 Tyr Ala Ala Thr Asn Leu Ala Asp Gly Val Pro Ser Arg Phe Ser Gly
 50 55 60
 Ser Gly Ser Gly Thr Gln Tyr Ser Leu Lys Ile Asn Ser Leu Gln Ser
 65 70 75 80
 Glu Asp Phe Gly Ser Tyr Tyr Cys Gln His Phe Trp Gly Thr Pro Tyr
 85 90 95
 Thr Phe Gly Gly Gly Thr Arg Leu Glu Ile Lys Arg
 100 105

<210> 4

<211> 113

<212> PRT

<213> Murine

<400> 4

Asp Val Val Met Thr Gln Thr Pro Leu Ser Leu Pro Val Ser Leu Gly
 1 5 10 15

Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Val His Ser
 20 25 30

Asn Gly Asn Thr Tyr Leu His Trp Tyr Leu Gln Lys Pro Gly Gln Ser
 35 40 45

Pro Lys Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser Gly Val Pro
 50 55 60

Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Tyr Leu Lys Ile
 65 70 75 80

Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Phe Cys Ser Gln Ser
 85 90 95

Thr His Val Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys
 100 105 110

Arg

<210> 5

<211> 106

<212> PRT

<213> Homo sapiens

<400> 5

Asp Ile Gln Met Thr Gln Ser Pro Ser Thr Leu Ser Ala Ser Val Gly
 1 5 10 15

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Ser Ile Ser Arg Trp
 20 25 30

Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Val Pro Lys Leu Leu Ile
 35 40 45

Tyr Lys Ala Ser Ser Leu Glu Ser Gly Val Pro Ser Arg Phe Ser Gly
 50 55 60

Ser Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
 65 70 75 80

Asp Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Tyr Asn Ser Tyr Ser Phe
 85 90 95

Gly Pro Gly Thr Lys Val Asp Ile Lys Arg
 100 105

<210> 6

<211> 108

<212> PRT

<213> Murine

<400> 6

Asp Ile Gln Met Thr Gln Ser Pro Ala Ser Leu Ser Ala Ser Val Gly
 1 5 10 15
 Glu Thr Val Thr Ile Thr Cys Thr Ala Ser Gly Asn Ile His Asn Tyr
 20 25 30
 Leu Ala Trp Tyr Gln Gln Lys Gln Gly Lys Ser Pro Gln Leu Leu Val
 35 40 45
 Tyr Tyr Thr Thr Thr Leu Ala Asp Gly Val Pro Ser Arg Phe Ser Gly
 50 55 60
 Ser Gly Ser Gly Thr Gln Tyr Ser Leu Lys Ile Asn Ser Leu Gln Pro
 65 70 75 80
 Glu Asp Phe Gly Ser Tyr Tyr Cys Gln His Phe Trp Ser Thr Pro Arg
 85 90 95
 Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
 100 105

<210> 7

<211> 109

<212> PRT

<213> Murine

<400> 7

Glu Asn Val Leu Thr Gln Ser Pro Ala Ile Met Ser Ala Ser Pro Gly
 1 5 10 15
 Glu Lys Val Thr Met Ala Cys Arg Ala Ser Ser Ser Val Ser Ser Thr
 20 25 30
 Tyr Leu His Trp Tyr Gln Gln Lys Ser Gly Ala Ser Pro Lys Leu Leu
 35 40 45
 Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ala Arg Phe Ser
 50 55 60
 Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu Tyr Ile Ser Ser Val Glu
 65 70 75 80
 Ala Glu Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Tyr Ser Gly Tyr Pro
 85 90 95
 Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys Arg
 100 105

<210> 8

<211> 114

<212> PRT

<213> Murine

<400> 8

Asp Ile Val Met Thr Gln Ser Pro Ser Ser Leu Thr Val Thr Ala Gly
 1 5 10 15

Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser Leu Phe Asn Ser
 20 25 30

Gly Lys Arg Lys Asn Phe Leu Thr Trp Tyr His Gln Lys Pro Gly Gln
 35 40 45

Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
 50 55 60

Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
 65 70 75 80

Ile Thr Ser Val Gln Ala Glu Asp Leu Ala Ile Tyr Tyr Cys Gln Asn
 85 90 95

Asp Tyr Ser His Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu
 100 105 110

Lys Arg

<210> 9

<211> 108

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Humanized
 murine

<400> 9

Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
 1 5 10 15

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Asp Val Asn Thr Ala
 20 25 30

Val Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
 35 40 45

Tyr Ser Ala Ser Phe Leu Glu Ser Gly Val Pro Ser Arg Phe Ser Gly
 50 55 60

Ser Arg Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
 65 70 75 80

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln His Tyr Thr Thr Pro Pro
 85 90 95

Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg
 100 105

<210> 10
 <211> 112
 <212> PRT
 <213> Murine

<400> 10
 Asp Ile Val Leu Thr Gln Ser Pro Gly Ser Leu Ala Val Ser Leu Gly
 1 5 10 15
 Gln Arg Ala Thr Ile Ser Cys Arg Ala Ser Gln Ser Val Asp Asp Asp
 20 25 30
 Gly Asn Ser Phe Leu His Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro
 35 40 45
 Lys Leu Leu Ile Tyr Arg Ser Ser Asn Leu Ile Ser Gly Ile Pro Asp
 50 55 60
 Arg Phe Ser Gly Ser Gly Ser Arg Thr Asp Phe Thr Leu Thr Ile Asn
 65 70 75 80
 Asp Pro Val Glu Ala Asp Val Ala Thr Tyr Tyr Cys Gln Gln Ser Asn
 85 90 95
 Gln Asp Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Ile Lys Arg
 100 105 110

<210> 11
 <211> 111
 <212> PRT
 <213> Murine

<400> 11
 Gln Ala Val Val Thr Gln Glu Ser Ala Leu Thr Thr Ser Pro Gly Glu
 1 5 10 15
 Thr Val Thr Leu Thr Cys Arg Ser Ser Thr Gly Ala Val Thr Thr Ser
 20 25 30
 Asn Tyr Ala Asn Trp Tyr Gln Glu Lys Pro Asp His Leu Phe Thr Gly
 35 40 45
 Leu Ile Glu Glu Thr Asn Asn Arg Ala Pro Gly Val Pro Ala Arg Phe
 50 55 60
 Ser Gly Ser Leu Ile Gly Asp Lys Ala Ala Leu Thr Ile Thr Gly Ala
 65 70 75 80
 Gln Thr Glu Asp Glu Ala Ile Tyr Phe Cys Ala Leu Trp Tyr Ser Asn
 85 90 95
 His Trp Val Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
 100 105 110

<210> 12
 <211> 114

<212> PRT
<213> Murine

<400> 12

Asp	Ile	Val	Met	Thr	Gln	Ser	Pro	Ser	Ser	Leu	Thr	Val	Thr	Ala	Gly
1				5					10					15	
Glu	Lys	Val	Thr	Met	Ser	Cys	Thr	Ser	Ser	Gln	Ser	Leu	Phe	Asn	Ser
			20					25					30		
Gly	Lys	Gln	Lys	Asn	Tyr	Leu	Thr	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Gln
		35					40					45			
Pro	Pro	Lys	Val	Leu	Ile	Tyr	Trp	Ala	Ser	Thr	Arg	Glu	Ser	Gly	Val
	50					55					60				
Pro	Asp	Arg	Phe	Thr	Gly	Ser	Gly	Ser	Gly	Thr	Asp	Phe	Thr	Leu	Thr
	65				70					75					80
Ile	Ser	Ser	Val	Gln	Ala	Glu	Asp	Leu	Ala	Val	Tyr	Tyr	Cys	Gln	Asn
				85					90					95	
Asp	Tyr	Ser	Asn	Pro	Leu	Thr	Phe	Gly	Gly	Gly	Thr	Lys	Leu	Glu	Leu
			100					105					110		

Lys Arg

<210> 13
<211> 113
<212> PRT
<213> Murine

<400> 13

Asp	Val	Val	Met	Thr	Gln	Thr	Pro	Leu	Ser	Leu	Pro	Val	Ser	Leu	Gly
1				5					10					15	
Asp	Gln	Ala	Ser	Ile	Ser	Cys	Arg	Ser	Ser	Gln	Ser	Leu	Val	His	Ser
			20					25					30		
Asn	Gly	Asn	Thr	Tyr	Leu	Asn	Trp	Tyr	Leu	Gln	Lys	Ala	Gly	Gln	Ser
		35					40					45			
Pro	Lys	Leu	Leu	Ile	Tyr	Lys	Val	Ser	Asn	Arg	Phe	Ser	Gly	Val	Pro
	50					55					60				
Asp	Thr	Phe	Ser	Gly	Ser	Gly	Ser	Gly	Thr	Asp	Phe	Thr	Leu	Lys	Ile
	65				70				75						80
Ser	Arg	Val	Glu	Ala	Glu	Asp	Leu	Gly	Ile	Tyr	Phe	Cys	Ser	Gln	Thr
				85					90					95	
Thr	His	Val	Pro	Pro	Thr	Phe	Gly	Gly	Gly	Thr	Lys	Leu	Glu	Ile	Lys
			100					105					110		

Arg

<210> 14
 <211> 109
 <212> PRT
 <213> Murine

<400> 14

Ala Val Val Thr Gln Glu Ser Ala Leu Thr Thr Ser Pro Gly Glu Thr
 1 5 10 15

Val Thr Leu Thr Cys Arg Ser Ser Thr Gly Ala Val Thr Thr Ser Asn
 20 25 30

Tyr Ala Asn Trp Tyr Gln Glu Lys Pro Asp His Leu Phe Thr Gly Leu
 35 40 45

Ile Gly Gly Thr Asn Asn Arg Ala Pro Gly Val Pro Ala Arg Phe Ser
 50 55 60

Gly Ser Leu Ile Gly Asp Lys Ala Ala Leu Thr Ile Thr Gly Ala Gln
 65 70 75 80

Thr Glu Asp Glu Ala Arg Tyr Phe Cys Ala Leu Trp Tyr Ser Asn Leu
 85 90 95

Trp Val Phe Gly Gly Gly Thr Lys Leu Thr Val Leu Gly
 100 105

<210> 15
 <211> 113
 <212> PRT
 <213> Murine

<400> 15

Asp Val Leu Met Thr Gln Thr Pro Ile Ser Ile Pro Val Ser Leu Gly
 1 5 10 15

Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Ile Val His Gly
 20 25 30

Asn Gly Asn Thr Tyr Leu Glu Trp Tyr Leu Gln Lys Pro Gly Gln Ser
 35 40 45

Pro Lys Leu Leu Ile Tyr Ser Ile Ser Ser Arg Phe Ser Gly Val Pro
 50 55 60

Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
 65 70 75 80

Ser Arg Val Gln Ala Glu Asp Leu Gly Val Tyr Tyr Cys Phe Gln Gly
 85 90 95

Ser His Val Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
 100 105 110

Thr

<210> 16
 <211> 108
 <212> PRT
 <213> Murine

<400> 16
 Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser Ala Ser Leu Gly
 1 5 10 15
 Asp Arg Val Thr Ile Ser Cys Arg Ala Ser Gln Asp Ile Tyr Asn Tyr
 20 25 30
 Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
 35 40 45
 Tyr Tyr Thr Ser Arg Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
 50 55 60
 Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Asn Gln
 65 70 75 80
 Glu Asp Met Ala Thr Tyr Ile Cys Gln Gln Gly Asn Thr Leu Pro Phe
 85 90 95
 Thr Phe Gly Ser Gly Thr Lys Leu Glu Ile Lys Arg
 100 105

<210> 17
 <211> 111
 <212> PRT
 <213> Homo sapiens

<400> 17
 Pro Ser Ala Leu Thr Gln Pro Pro Ser Ala Ser Gly Ser Leu Gly Gln
 1 5 10 15
 Ser Val Thr Ile Ser Cys Thr Gly Thr Ser Ser Asp Val Gly Gly Tyr
 20 25 30
 Asn Tyr Val Ser Trp Tyr Gln Gln His Ala Gly Lys Ala Pro Lys Val
 35 40 45
 Leu Ile Tyr Glu Val Asn Lys Arg Pro Ser Gly Val Pro Asp Arg Phe
 50 55 60
 Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu Thr Val Ser Gly Leu
 65 70 75 80
 Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Ser Ser Tyr Glu Gly Ser
 85 90 95
 Asp Asn Phe Val Phe Gly Thr Gly Thr Lys Val Thr Val Leu Gly
 100 105 110

<210> 18
 <211> 108
 <212> PRT
 <213> Anous minutus

<220>
 <223> Noddy Tern

<400> 18
 Asp Ile Val Met Thr Gln Ser Pro Lys Phe Met Ser Thr Ser Val Gly
 1 5 10 15
 Asp Arg Val Thr Ile Thr Cys Lys Ala Ser Gln Asp Val Ser Thr Ala
 20 25 30
 Val Val Trp Tyr Gln Gln Lys Pro Gly Gln Ser Pro Lys Leu Leu Ile
 35 40 45
 Tyr Trp Ala Ser Thr Arg His Ile Gly Val Pro Asp Arg Phe Ala Gly
 50 55 60
 Ser Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser Ser Val Gln Ala
 65 70 75 80
 Glu Asp Leu Ala Leu Tyr Tyr Cys Gln Gln His Tyr Ser Pro Pro Trp
 85 90 95
 Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
 100 105

<210> 19
 <211> 113
 <212> PRT
 <213> Murine

<400> 19
 Glu Leu Val Met Thr Gln Ser Pro Leu Ser Leu Pro Val Ser Leu Gly
 1 5 10 15
 Asp Gln Ala Ser Ile Ser Cys Arg Pro Ser Gln Ser Leu Val His Ser
 20 25 30
 Asn Gly Asn Thr Tyr Leu His Trp Tyr Leu Gln Lys Pro Gly Gln Ser
 35 40 45
 Pro Lys Leu Leu Ile Tyr Arg Val Ser Asn Arg Phe Ser Gly Val Pro
 50 55 60
 Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Ala Phe Thr Leu Lys Ile
 65 70 75 80
 Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Phe Cys Ser Gln Gly
 85 90 95
 Thr His Val Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Leu Lys
 100 105 110

Arg

<210> 20
 <211> 113
 <212> PRT
 <213> Murine

<400> 20
 Asp Val Val Met Thr Gln Ile Pro Leu Ser Leu Pro Val Asn Leu Gly
 1 5 10 15
 Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Ile His Ser
 20 25 30
 Asn Gly Asn Thr Tyr Leu His Trp Tyr Leu Gln Lys Pro Gly Gln Ser
 35 40 45
 Pro Lys Leu Leu Met Tyr Lys Val Ser Asn Arg Phe Tyr Gly Val Pro
 50 55 60
 Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
 65 70 75 80
 Ser Arg Val Glu Ala Glu Asp Leu Gly Ile Tyr Phe Cys Ser Gln Ser
 85 90 95
 Ser His Val Pro Pro Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
 100 105 110

Arg

<210> 21
 <211> 108
 <212> PRT
 <213> Murine

<400> 21
 Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser Ala Ser Leu Gly
 1 5 10 15
 Asp Arg Val Thr Ile Ser Cys Arg Ala Ser Gln Asp Ile Ser Asn Tyr
 20 25 30
 Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
 35 40 45
 Tyr Tyr Thr Ser Arg Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
 50 55 60
 Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu His
 65 70 75 80

Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys Arg
 100 105

<210> 24
 <211> 106
 <212> PRT
 <213> Murine

<400> 24
 Asp Ile Val Leu Thr Gln Ser Pro Ala Ile Met Ser Ala Ser Pro Gly
 1 5 10 15
 Glu Lys Val Thr Met Thr Cys Ser Ala Ser Ser Ser Val Asn Tyr Met
 20 25 30
 Tyr Trp Tyr Gln Gln Lys Ser Gly Thr Ser Pro Lys Arg Trp Ile Tyr
 35 40 45
 Asp Thr Ser Lys Leu Ala Ser Gly Val Pro Val Arg Phe Ser Gly Ser
 50 55 60
 Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Ser Met Glu Thr Glu
 65 70 75 80
 Asp Ala Ala Glu Tyr Tyr Cys Gln Gln Trp Gly Thr Asn Pro Thr Phe
 85 90 95
 Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
 100 105

<210> 25
 <211> 113
 <212> PRT
 <213> Murine

<400> 25
 Asp Val Leu Met Thr Gln Thr Pro Leu Ser Leu Pro Val Ser Leu Gly
 1 5 10 15
 Asp Gln Ala Ser Ile Ser Cys Arg Ser Asn Gln Thr Ile Leu Leu Ser
 20 25 30
 Asp Gly Asp Thr Tyr Leu Glu Trp Tyr Leu Gln Lys Pro Gly Gln Ser
 35 40 45
 Pro Lys Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser Gly Val Pro
 50 55 60
 Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
 65 70 75 80
 Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Tyr Cys Phe Gln Gly
 85 90 95

Ser His Val Pro Pro Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
 100 105 110

Arg

<210> 26
 <211> 114
 <212> PRT
 <213> Murine

<400> 26
 Asp Ile Val Met Thr Gln Ser Pro Ser Ser Leu Ser Val Ser Ala Gly
 1 5 10 15
 Glu Arg Val Thr Met Ser Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser
 20 25 30
 Gly Asn Gln Lys Asn Phe Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
 35 40 45
 Pro Pro Lys Leu Leu Ile Tyr Gly Ala Ser Thr Arg Glu Ser Glu Val
 50 55 60
 Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
 65 70 75 80
 Ile Ser Ser Val Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys Gln Asn
 85 90 95
 Asp His Ser Tyr Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Ile
 100 105 110

Lys Arg

<210> 27
 <211> 108
 <212> PRT
 <213> Murine

<400> 27
 Asp Ile Val Leu Thr Gln Ser Pro Ala Thr Leu Ser Val Thr Pro Gly
 1 5 10 15
 Asn Ser Val Ser Leu Ser Cys Arg Ala Ser Gln Ser Ile Gly Asn Asn
 20 25 30
 Leu His Trp Tyr Gln Gln Lys Ser His Glu Ser Pro Arg Leu Leu Ile
 35 40 45
 Lys Tyr Ala Ser Gln Ser Ile Ser Gly Ile Pro Ser Arg Phe Ser Gly
 50 55 60
 Ser Gly Ser Gly Thr Asp Phe Thr Leu Ser Ile Asn Ser Val Glu Thr
 65 70 75 80

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105

<400> 28

Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Leu Val His Ser
20 25 30

Pro Lys Val Lys Ile Tyr Lys Val Ser Asn Arg Phe Ser Gly Val Pro
50 55 60

Ser Arg Val Glu Ala Glu Asp Leu Gly Met Tyr Phe Cys Ser Gln Ser
85 90 95

Thr His Val Pro Trp Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
100 105 110

Arg

<400> 29

Asp Arg Val Ser Ile Ser Cys Arg Ala Ser Gln Asp Ile Asn Asn Phe
20 25 30

Tyr Phe Thr Ser Arg Ser Gln Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Gln
65 70 75 80

Glu Asp Ile Ala Thr Tyr Phe Cys Gln Gln Gly Asn Ala Leu Pro Arg
85 90 95

Thr Phe Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105

<210> 30

<211> 105

<212> PRT

<213> Homo sapiens

<400> 30

Glu Leu Thr Gln Pro Pro Ser Val Ser Val Ser Pro Gly Gln Thr Ala
1 5 10 15

Arg Ile Thr Cys Ser Ala Asn Ala Leu Pro Asn Gln Tyr Ala Tyr Trp
20 25 30

Tyr Gln Gln Lys Pro Gly Arg Ala Pro Val Met Val Ile Tyr Lys Asp
35 40 45

Thr Gln Arg Pro Ser Gly Ile Pro Gln Arg Phe Ser Ser Ser Thr Ser
50 55 60

Gly Thr Thr Val Thr Leu Thr Ile Ser Gly Val Gln Ala Glu Asp Glu
65 70 75 80

Ala Asp Tyr Tyr Cys Gln Ala Trp Asp Asn Ser Ala Ser Ile Phe Gly
85 90 95

Gly Gly Thr Lys Leu Thr Val Leu Gly
100 105

<210> 31

<211> 119

<212> PRT

<213> Murine

<400> 31

Gln Val Lys Leu Gln Glu Ser Gly Pro Ala Val Ile Lys Pro Ser Gln
1 5 10 15

Ser Leu Ser Leu Thr Cys Ile Val Ser Gly Phe Ser Ile Thr Arg Thr
20 25 30

Asn Tyr Cys Trp His Trp Ile Arg Pro Gly Lys Gly Leu Glu Trp Met
35 40 45

Gly Arg Ile Cys Tyr Glu Glu Ser Ile Tyr Tyr Ser Pro Ser Ile Lys
50 55 60

Ser Arg Ser Thr Ile Ser Arg Asp Thr Ser Leu Asn Lys Phe Phe Ile
65 70 75 80

Gln Leu Ile Ser Val Thr Asn Glu Asp Thr Ala Met Tyr Tyr Cys Ser
85 90 95

Arg Glu Asn His Met Tyr Glu Thr Tyr Phe Asp Val Trp Gly Gln Gly
100 105 110

Thr Thr Val Thr Val Ser Ser
115

<210> 32
<211> 117
<212> PRT
<213> Murine

<400> 32
Asp Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser Gln
1 5 10 15

Ser Gln Ser Gln Ser Leu Thr Cys Thr Val Thr Gly Tyr Ser Ile Thr
20 25 30

Ser Asp Tyr Ala Trp Asn Trp Ile Arg Gln Phe Pro Gly Asn Lys Leu
35 40 45

Glu Trp Met Gly Tyr Met Ser Tyr Ser Gly Ser Thr Arg Tyr Asn Pro
50 55 60

Ser Leu Arg Ser Arg Ile Ser Ile Thr Arg Asp Thr Ser Lys Asn Gln
65 70 75 80

Phe Phe Leu Gln Leu Lys Ser Val Thr Thr Glu Asp Thr Ala Thr Tyr
85 90 95

Phe Cys Ala Arg Gly Trp Pro Leu Ala Tyr Trp Gly Gln Gly Thr Gln
100 105 110

Val Ser Val Ser Glu
115

<210> 33
<211> 115
<212> PRT
<213> Murine

<400> 33
Val Gln Leu Gln Gln Ser Asp Ala Glu Lys Val Lys Pro Gly Ala Ser
1 5 10 15

Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Asp His Ala
20 25 30

Ile His Trp Ala Lys Gln Lys Pro Glu Gln Gly Leu Glu Trp Ile Gly
35 40 45

Tyr Ile Ser Pro Gly Asn Asp Asp Ile Lys Tyr Asn Glu Lys Phe Lys
 50 55 60
 Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser Thr Ala Tyr Met
 65 70 75 80
 Gln Leu Asn Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Phe Cys Lys
 85 90 95
 Arg Ser Thr Ala Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val Thr
 100 105 110
 Val Ser Ser
 115

<210> 34
 <211> 119
 <212> PRT
 <213> Murine

<400> 34
 Glu Val Gln Pro Val Glu Thr Gly Gly Gly Leu Val Gln Pro Lys Gly
 1 5 10 15
 Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Ser Phe Asn Thr Asn
 20 25 30
 Ala Asn Asn Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
 35 40 45
 Ala Arg Ser Lys Ser Asn Asn Tyr Ala Thr Tyr Tyr Ala Asp Ser Val
 50 55 60
 Lys Asp Arg Phe Thr Ile Ser Arg Asp Asp Ser Gln Asn Met Leu Tyr
 65 70 75 80
 Leu Gln Met Asn Asn Leu Lys Thr Glu Asp Thr Ala Met Tyr Tyr Cys
 85 90 95
 Val Arg Asp Gln Thr Gly Thr Ala Trp Phe Ala Tyr Trp Gly Gln Gly
 100 105 110
 Thr Leu Val Thr Val Ser Ala
 115

<210> 35
 <211> 126
 <212> PRT
 <213> Homo sapiens

<400> 35
 Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Phe Gly Arg
 1 5 10 15
 Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Asn Asp Tyr
 20 25 30

Ala Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
 35 40 45

Ser Gly Ile Ser Trp Asp Ser Ser Ser Ile Gly Tyr Ala Asp Ser Val
 50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr
 65 70 75 80

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Met Ala Leu Tyr Tyr Cys
 85 90 95

Val Lys Gly Arg Asp Tyr Tyr Asp Ser Gly Gly Tyr Phe Thr Val Ala
 100 105 110

Phe Asp Ile Trp Gly Gln Gly Thr Met Val Thr Val Ser Ser
 115 120 125

<210> 36

<211> 116

<212> PRT

<213> Murine

<400> 36

Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala Pro Ser Gln
 1 5 10 15

Ser Leu Ser Ile Thr Cys Thr Val Ser Gly Phe Ser Leu Thr Gly Tyr
 20 25 30

Gly Val Asn Trp Val Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Leu
 35 40 45

Gly Met Ile Trp Gly Asp Gly Asn Thr Asp Tyr Asn Ser Ala Leu Lys
 50 55 60

Ser Arg Leu Ser Ile Ser Lys Asp Asn Ser Lys Ser Gln Val Phe Leu
 65 70 75 80

Lys Met Asn Ser Leu His Thr Asp Asp Thr Ala Arg Tyr Tyr Cys Ala
 85 90 95

Arg Glu Arg Asp Tyr Arg Leu Asp Tyr Trp Gly Gln Gly Thr Thr Leu
 100 105 110

Thr Val Ser Ser
 115

<210> 37

<211> 119

<212> PRT

<213> Murine

<400> 37

Asp Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Glu Lys Pro Gly Ala
 1 5 10 15

Ser Val Lys Ile Ser Cys Lys Ala Ser Gly Phe Ser Leu Pro Gly His
 20 25 30

Asn Ile Asn Trp Ile Val Gln Arg Asn Gly Lys Ser Leu Glu Trp Ile
 35 40 45

Gly Asn Ile Asp Pro Tyr Tyr Gly Gly Thr Asn Phe Asn Pro Lys Phe
 50 55 60

Lys Gly Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Ser Thr Leu Tyr
 65 70 75 80

Met His Leu Thr Ser Leu Gln Ser Glu Asp Ser Ala Val Tyr Tyr Cys
 85 90 95

Ala Arg Arg Arg Asp Gly Asn Tyr Gly Phe Thr Tyr Trp Gly Gln Gly
 100 105 110

Thr Leu Val Thr Val Ser Ala
 115

<210> 38

<211> 120

<212> PRT

<213> Murine

<400> 38

Glu Val Leu Leu Val Glu Ser Gly Gly Asp Leu Val Lys Pro Gly Gly
 1 5 10 15

Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Phe
 20 25 30

Gly Met Ser Trp Val Arg His Thr Pro Asp Lys Arg Leu Glu Trp Val
 35 40 45

Ala Thr Ile Ser Asn Gly Gly Gly Tyr Thr Tyr Tyr Gln Asp Ser Val
 50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Phe
 65 70 75 80

Leu Glu Met Thr Ser Leu Lys Ser Glu Asp Ala Gly Leu Tyr Tyr Cys
 85 90 95

Ala Arg Arg Glu Arg Tyr Asp Glu Lys Gly Phe Ala Tyr Trp Gly Arg
 100 105 110

Gly Thr Leu Val Thr Val Ser Ala
 115 120

<210> 39
 <211> 120
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Humanized
 murine

<400> 39

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gln Gln
 1 5 10 15
 Phe Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Asn Ile Lys Asp Thr
 20 25 30
 Tyr Ile His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
 35 40 45
 Ala Arg Ile Tyr Pro Thr Asn Gly Tyr Thr Arg Tyr Ala Asp Ser Val
 50 55 60
 Lys Gly Arg Phe Thr Ile Ser Ala Asp Thr Ser Lys Asn Thr Leu Tyr
 65 70 75 80
 Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
 85 90 95
 Ser Arg Trp Gly Gly Asp Gly Phe Tyr Ala Met Asp Val Trp Gly Gln
 100 105 110
 Gly Thr Leu Val Thr Val Ser Ser
 115 120

<210> 40
 <211> 115
 <212> PRT
 <213> Murine

<400> 40

Gln Val Gln Leu Gln Glu Ser Gly Pro Gly Ile Leu Gln Pro Ser Gln
 1 5 10 15
 Ser Leu Ser Leu Thr Cys Ser Phe Ser Gly Phe Ser Leu Ser Thr Tyr
 20 25 30
 Gly Met Gly Val Ser Trp Ile Arg Gln Pro Ser Gly Lys Gly Leu Glu
 35 40 45
 Trp Leu Ala His Ile Phe Trp Asp Gly Asp Lys Arg Tyr Asn Pro Ser
 50 55 60
 Leu Lys Ser Arg Leu Lys Ile Ser Lys Asp Thr Ser Asn Asn Gln Val
 65 70 75 80
 Phe Leu Lys Ile Thr Ser Val Asp Thr Ala Asp Thr Ala Thr Tyr Tyr
 85 90 95

Cys Val Gln Glu Gly Tyr Ile Tyr Trp Gly Gln Gly Thr Ser Val Thr
 100 105 110

Val Ser Ser
 115

<210> 41
 <211> 122
 <212> PRT
 <213> Murine

<400> 41
 Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala Pro Ser Gln
 1 5 10 15

Thr Leu Ser Ile Thr Cys Thr Val Ser Gly Phe Leu Leu Ile Ser Asn
 20 25 30

Gly Val His Trp Val Arg Gln Pro Pro Gln Lys Gly Leu Glu Trp Leu
 35 40 45

Gly Val Ile Trp Ala Gly Gly Asn Thr Asn Tyr Asn Ser Ala Leu Met
 50 55 60

Ser Arg Val Ser Ile Ser Lys Asp Asn Ser Lys Ser Gln Val Phe Leu
 65 70 75 80

Lys Met Lys Ser Leu Gln Thr Asp Asp Thr Ala Met Tyr Tyr Cys Ala
 85 90 95

Arg Asp Phe Tyr Asp Tyr Asp Val Phe Tyr Tyr Ala Met Asp Tyr Trp
 100 105 110

Gly Gln Gly Thr Ser Val Thr Val Ser Ser
 115 120

<210> 42
 <211> 120
 <212> PRT
 <213> Murine

<400> 42
 Glu Val Gln Leu Val Glu Ser Gly Gly Asp Leu Val Lys Pro Gly Gly
 1 5 10 15

Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Ser Phe Ser Ser Tyr
 20 25 30

Gly Met Ser Trp Val Arg Gln Thr Pro Asp Lys Arg Leu Glu Trp Val
 35 40 45

Ala Thr Ile Ser Asn Gly Gly Gly Tyr Thr Tyr Tyr Pro Asp Ser Val
 50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr
 65 70 75 80

Leu Gln Met Ser Ser Leu Lys Ser Glu Asp Ser Ala Met Tyr Tyr Cys
 85 90 95

Ala Arg Arg Glu Arg Tyr Asp Glu Asn Gly Phe Ala Tyr Trp Gly Gln
 100 105 110

Gly Thr Leu Val Thr Val Ser Ala
 115 120

<210> 43
 <211> 118
 <212> PRT
 <213> Murine

<400> 43
 Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys Pro Gly Ala Ser
 1 5 10 15

Val Arg Met Ser Cys Lys Ser Ser Gly Tyr Ile Phe Thr Asp Phe Tyr
 20 25 30

Met Asn Trp Val Arg Gln Ser His Gly Lys Ser Leu Asp Tyr Ile Gly
 35 40 45

Tyr Ile Ser Pro Tyr Ser Gly Val Thr Gly Tyr Asn Gln Lys Phe Lys
 50 55 60

Gly Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Ser Thr Ala Tyr Met
 65 70 75 80

Glu Leu Arg Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys Ala
 85 90 95

Gly Ser Ser Gly Asn Lys Trp Ala Met Asp Tyr Trp Gly His Gly Ala
 100 105 110

Ser Val Thr Val Ser Ser
 115

<210> 44
 <211> 114
 <212> PRT
 <213> Murine

<400> 44
 Glu Val Thr Leu Val Glu Ser Gly Gly Asp Ser Val Lys Pro Gly Gly
 1 5 10 15

Ser Leu Lys Lys Ser Cys Ala Ala Ser Gly Phe Thr Leu Ser Gly Glu
 20 25 30

Thr Met Ser Trp Val Arg Gln Thr Pro Glu Lys Arg Leu Glu Trp Val
 35 40 45

Ala Thr Thr Leu Ser Gly Gly Gly Phe Thr Phe Tyr Ser Ala Ser Val
 50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Gln Asn Asn Leu Tyr
 65 70 75 80

Leu Gln Leu Asn Ser Leu Arg Ser Glu Asp Thr Ala Leu Tyr Phe Cys
 85 90 95

Ala Ser His Arg Phe Val His Trp Gly His Gly Thr Leu Val Thr Val
 100 105 110

Ser Ala

<210> 45
 <211> 118
 <212> PRT
 <213> Murine

<400> 45
 Gln Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Arg Pro Gly Ser
 1 5 10 15

Ser Val Lys Ile Ser Cys Lys Gly Ser Gly Tyr Thr Phe Thr Thr Tyr
 20 25 30

Ala Met His Trp Val Lys Gln Ser His Ala Lys Ser Leu Glu Trp Ile
 35 40 45

Gly Leu Ile Ser Pro Ser Ser Gly Tyr Thr Ser Tyr Asn Gly Glu Phe
 50 55 60

Lys Gly Lys Ala Thr Met Thr Val Asp Lys Ser Ser Ser Thr Ala Tyr
 65 70 75 80

Met Glu Leu Ala Arg Leu Thr Ser Glu Asp Ser Ala Ile Tyr Tyr Cys
 85 90 95

Ala Arg Val Met Gly Glu Gln Tyr Phe Asp Phe Trp Gly Ala Gly Thr
 100 105 110

Thr Val Thr Val Ser Ser
 115

<210> 46
 <211> 119
 <212> PRT
 <213> Murine

<400> 46
 Glu Val Lys Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
 1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Thr Ser Gly Phe Thr Phe Thr Asp Tyr
 20 25 30
 Tyr Met Ser Trp Val Arg Gln Pro Pro Gly Lys Ala Leu Glu Trp Leu
 35 40 45
 Gly Phe Ile Arg Asn Lys Ala Asp Gly Tyr Thr Thr Glu Tyr Ser Ala
 50 55 60
 Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Gln Ser Ile
 65 70 75 80
 Leu Tyr Leu Gln Met Asn Thr Leu Arg Ala Glu Asp Ser Ala Thr Tyr
 85 90 95
 Tyr Cys Thr Arg Asp Pro Tyr Gly Pro Ala Ala Tyr Trp Gly Gln Gly
 100 105 110
 Thr Leu Val Thr Val Ser Ala
 115

<210> 47
 <211> 117
 <212> PRT
 <213> Homo sapiens

<400> 47
 Pro Leu Val Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser Glu
 1 5 10 15
 Ala Leu Ser Leu Thr Cys Thr Val Ser Gly Asp Ser Ile Asn Thr Ile
 20 25 30
 Leu Tyr Tyr Trp Ser Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu Glu
 35 40 45
 Trp Ile Gly Tyr Ile Tyr Tyr Ser Gly Ser Thr Tyr Gly Asn Pro Ser
 50 55 60
 Leu Lys Ser Arg Val Thr Ile Ser Val Asn Thr Ser Lys Asn Gln Phe
 65 70 75 80
 Tyr Ser Lys Leu Ser Ser Val Thr Ala Ala Asp Thr Ala Val Tyr Tyr
 85 90 95
 Cys Ala Arg Val Pro Leu Val Val Asn Pro Trp Gly Gln Gly Thr Leu
 100 105 110
 Val Thr Val Ser Ser
 115

<210> 48
 <211> 120
 <212> PRT
 <213> Anous Minutus

<220>

<223> Noddy Tern

<400> 48

Gln Ile Gln Leu Val Gln Ser Gly Pro Glu Leu Lys Lys Pro Gly Glu
 1 5 10 15

Thr Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Asn Tyr
 20 25 30

Gly Met Asn Trp Val Lys Gln Ala Pro Gly Lys Gly Leu Lys Trp Met
 35 40 45

Gly Trp Ile Asn Thr Asn Thr Gly Glu Pro Thr Tyr Gly Glu Glu Phe
 50 55 60

Lys Gly Arg Phe Ala Phe Ser Leu Glu Thr Ser Ala Ser Thr Ala Asn
 65 70 75 80

Leu Gln Ile Asn Asn Leu Lys Asn Glu Asp Thr Ala Thr Phe Phe Cys
 85 90 95

Ala Arg Gly Glu Asp Asn Phe Gly Ser Leu Ser Asp Tyr Trp Gly Gln
 100 105 110

Gly Thr Thr Val Thr Val Ser Ser
 115 120

<210> 49

<211> 116

<212> PRT

<213> Murine

<400> 49

Arg Val Gln Leu Leu Glu Ser Gly Ala Glu Leu Met Lys Pro Gly Ala
 1 5 10 15

Ser Val Gln Ile Ser Cys Lys Ala Thr Gly Tyr Thr Phe Ser Glu Tyr
 20 25 30

Trp Ile Glu Trp Val Lys Glu Arg Pro Gly His Gly Leu Glu Trp Ile
 35 40 45

Gly Glu Ile Leu Pro Gly Ser Gly Arg Thr Asn Tyr Arg Glu Lys Phe
 50 55 60

Lys Gly Lys Ala Thr Phe Thr Ala Asp Thr Ser Ser Asn Thr Ala Tyr
 65 70 75 80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
 85 90 95

Thr Arg Gly Tyr Ser Ser Met Asp Tyr Trp Gly Gln Gly Thr Ser Val
 100 105 110

Thr Val Ser Ala
 115

<210> 50
 <211> 119
 <212> PRT
 <213> Murine

<400> 50
 Gln Ile Gln Leu Val Gln Ser Gly Pro Glu Leu Lys Lys Pro Gly Glu
 1 5 10 15
 Thr Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Ala Phe Thr Asn Tyr
 20 25 30
 Gly Val Asn Trp Val Lys Glu Ala Pro Gly Lys Glu Leu Lys Trp Met
 35 40 45
 Gly Trp Ile Asn Ile Tyr Thr Gly Glu Pro Thr Tyr Val Asp Asp Phe
 50 55 60
 Lys Gly Arg Phe Ala Phe Ser Leu Glu Thr Ser Ala Ser Thr Ala Tyr
 65 70 75 80
 Leu Glu Ile Asn Asn Leu Lys Asn Glu Asp Thr Ala Thr Tyr Phe Cys
 85 90 95
 Thr Arg Gly Asp Tyr Val Asn Trp Tyr Phe Asp Val Trp Gly Ala Gly
 100 105 110
 Thr Thr Val Thr Val Ser Ser
 115

<210> 51
 <211> 124
 <212> PRT
 <213> Murine

<400> 51
 Gln Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Val Arg Ala Gly Ser
 1 5 10 15
 Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
 20 25 30
 Gly Val Asn Trp Val Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile
 35 40 45
 Gly Tyr Ile Asn Pro Gly Lys Gly Tyr Leu Ser Tyr Asn Glu Lys Phe
 50 55 60
 Lys Gly Lys Thr Thr Leu Thr Val Asp Arg Ser Ser Ser Thr Ala Tyr
 65 70 75 80
 Met Gln Leu Arg Ser Leu Thr Ser Glu Asp Ala Ala Val Tyr Phe Cys
 85 90 95

Ala Arg Ser Phe Tyr Gly Gly Ser Asp Leu Ala Val Tyr Tyr Phe Asp
 100 105 110

Ser Trp Gly Gln Gly Thr Thr Leu Thr Val Ser Ser
 115 120

<210> 52

<211> 126

<212> PRT

<213> Homo sapiens

<400> 52

Glu Val Gln Leu Val Gln Ser Gly Gly Gly Val Val Gln Pro Gly Arg
 1 5 10 15

Ser Leu Arg Leu Ser Cys Ser Ser Ser Gly Phe Ile Phe Ser Ser Tyr
 20 25 30

Ala Met Tyr Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
 35 40 45

Ala Ile Ile Trp Asp Asp Gly Ser Asp Gln His Tyr Ala Asp Ser Val
 50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asn Asp Ser Lys Asn Ser Leu Phe
 65 70 75 80

Leu Gln Met Asp Ser Leu Arg Pro Glu Asp Thr Gly Val Tyr Phe Cys
 85 90 95

Ala Arg Asp Gly Gly His Gly Phe Cys Ser Ser Ala Ser Cys Phe Gly
 100 105 110

Pro Asp Tyr Trp Gly Gln Gly Thr Pro Val Thr Val Ser Ser
 115 120 125

<210> 53

<211> 118

<212> PRT

<213> Murine

<400> 53

Glu Val Lys Leu Leu Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
 1 5 10 15

Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Asp Phe Ser Lys Tyr
 20 25 30

Trp Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Ile
 35 40 45

Gly Glu Ile His Pro Asp Ser Gly Thr Ile Asn Tyr Thr Pro Ser Leu
 50 55 60

Lys Asp Lys Phe Ile Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr
 65 70 75 80

Leu Gln Met Ser Lys Val Arg Ser Glu Asp Thr Ala Leu Tyr Tyr Cys
 85 90 95

Ala Arg Leu His Tyr Tyr Gly Tyr Asn Ala Tyr Trp Gly Gln Gly Thr
 100 105 110

Leu Val Thr Val Ser Ala
 115

<210> 54
 <211> 115
 <212> PRT
 <213> Murine

<400> 54
 Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Met Lys Pro Gly Ala Ser
 1 5 10 15

Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe Ser Asp Tyr Trp
 20 25 30

Ile Glu Trp Val Lys Gln Arg Pro Gly His Gly Leu Glu Trp Ile Gly
 35 40 45

Glu Ile Leu Pro Gly Ser Gly Ser Thr Asn Tyr His Glu Arg Phe Lys
 50 55 60

Gly Lys Ala Thr Phe Thr Ala Asp Thr Ser Ser Ser Thr Ala Tyr Met
 65 70 75 80

Gln Leu Asn Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys Leu
 85 90 95

His Gly Asn Tyr Asp Phe Asp Gly Trp Gly Gln Gly Thr Thr Leu Thr
 100 105 110

Val Ser Ser
 115

<210> 55
 <211> 119
 <212> PRT
 <213> Murine

<400> 55
 Glu Val Gln Leu Val Glu Ser Gly Gly Asp Leu Val Lys Pro Gly Gly
 1 5 10 15

Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Arg Cys
 20 25 30

Ala Met Ser Trp Val Arg Gln Thr Pro Glu Lys Arg Leu Glu Trp Val
 35 40 45

Ala Gly Ile Ser Ser Gly Gly Ser Tyr Thr Phe Tyr Pro Asp Thr Val
 50 55 60

Lys Gly Arg Phe Ile Ile Ser Arg Asn Asn Ala Arg Asn Thr Leu Ser
 65 70 75 80

Leu Gln Met Ser Ser Leu Arg Ser Glu Asp Thr Ala Ile Tyr Tyr Cys
 85 90 95

Thr Arg Tyr Ser Ser Asp Pro Phe Tyr Phe Asp Tyr Trp Gly Gln Gly
 100 105 110

Thr Thr Leu Thr Val Ser Ser
 115

<210> 56

<211> 122

<212> PRT

<213> Murine

<400> 56

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
 1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Thr Ser Gly Phe Thr Phe Ser Asp Phe
 20 25 30

Tyr Met Glu Trp Val Arg Gln Pro Pro Gly Lys Arg Leu Glu Trp Ile
 35 40 45

Ala Ala Ser Arg Asn Lys Gly Asn Lys Tyr Thr Thr Glu Tyr Ser Ala
 50 55 60

Ser Val Lys Gly Arg Phe Ile Val Ser Arg Asp Thr Ser Gln Ser Ile
 65 70 75 80

Leu Tyr Leu Gln Met Asn Ala Leu Arg Ala Glu Asp Thr Ala Ile Tyr
 85 90 95

Tyr Cys Ala Arg Asn Tyr Tyr Gly Ser Thr Trp Tyr Phe Asp Val Trp
 100 105 110

Gly Ala Gly Thr Thr Val Thr Val Ser Ser
 115 120

<210> 57

<211> 113

<212> PRT

<213> Murine

<400> 57

Asp Val Gln Leu Gln Glu Ser Gly Pro Ser Leu Val Lys Pro Ser Gln
 1 5 10 15

Thr Leu Ser Leu Thr Cys Ser Val Thr Gly Asp Ser Ile Thr Ser Asp
 20 25 30

Tyr Trp Ser Trp Ile Arg Lys Phe Pro Gly Asn Arg Leu Glu Tyr Met
 35 40 45

Gly Tyr Val Ser Tyr Ser Gly Ser Thr Tyr Tyr Asn Pro Ser Leu Lys
 50 55 60

Ser Arg Ile Ser Ile Thr Arg Asp Thr Ser Lys Asn Gln Tyr Tyr Leu
 65 70 75 80

Asp Leu Asn Ser Val Thr Thr Glu Asp Thr Ala Thr Tyr Tyr Cys Ala
 85 90 95

Asn Trp Asp Gly Asp Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser
 100 105 110

Ala

<210> 58

<211> 118

<212> PRT

<213> Murine

<400> 58

Glu Val Gln Leu Asp Glu Thr Gly Gly Gly Leu Val Gln Pro Gly Arg
 1 5 10 15

Pro Met Lys Leu Ser Cys Val Ala Ser Gly Phe Thr Phe Ser Asp Tyr
 20 25 30

Trp Met Asn Trp Val Arg Gln Ser Pro Glu Lys Gly Leu Glu Trp Val
 35 40 45

Ala Gln Ile Arg Asn Lys Pro Tyr Asn Tyr Glu Thr Tyr Tyr Ser Asp
 50 55 60

Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asp Ser Lys Ser Ser
 65 70 75 80

Val Tyr Leu Gln Met Asn Asn Leu Arg Val Glu Asp Met Gly Ile Tyr
 85 90 95

Tyr Cys Thr Gly Ser Tyr Tyr Gly Met Asp Tyr Trp Gly Gln Gly Thr
 100 105 110

Ser Val Thr Val Ser Ser
 115

<210> 59

<211> 121

<212> PRT

<213> Murine

<400> 59

Glu Val Gln Leu Gln Gln Ser Gly Val Glu Leu Val Arg Ala Gly Ser
 1 5 10 15

Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Asn
 20 25 30

Gly Ile Asn Trp Val Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile
 35 40 45

Gly Tyr Asn Asn Pro Gly Asn Gly Tyr Ile Ala Tyr Asn Glu Lys Phe
 50 55 60

Lys Gly Lys Thr Thr Leu Thr Val Asp Lys Ser Ser Ser Thr Ala Tyr
 65 70 75 80

Met Gln Leu Arg Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Phe Cys
 85 90 95

Ala Arg Ser Glu Tyr Tyr Gly Gly Ser Tyr Lys Phe Asp Tyr Trp Gly
 100 105 110

Gln Gly Thr Thr Leu Thr Val Ser Ser
 115 120

<210> 60

<211> 121

<212> PRT

<213> Homo sapiens

<400> 60

Ala Val Gln Leu Val Gln Ala Gly Gly Gly Val Val Gln Pro Gly Arg
 1 5 10 15

Ser Leu Arg Leu Ser Cys Ile Ala Ser Gly Phe Thr Phe Ser Asn Tyr
 20 25 30

Gly Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
 35 40 45

Ala Val Ile Trp Tyr Asn Gly Ser Arg Thr Tyr Tyr Gly Asp Ser Val
 50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Arg Thr Leu Tyr
 65 70 75 80

Met Gln Met Asn Ser Leu Arg Thr Glu Asp Thr Ala Val Tyr Tyr Cys
 85 90 95

Ala Arg Asp Pro Asp Ile Leu Thr Ala Phe Ser Phe Asp Tyr Trp Gly
 100 105 110

Gln Gly Val Leu Val Thr Val Ser Ser
 115 120